

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1. (currently amended) A method for adventitious root mass propagation of ginseng, camphor ginseng ~~and~~ or wild ginseng by tissue culture, which comprises the steps of:

~~Inducing~~ inducing ~~the~~ a callus by seeding any one of ~~the~~ a 2-3 mm<sup>2</sup> ~~sections~~ section of ginseng, camphor ginseng, or wild ginseng in a MS ~~media~~ medium containing each of ~~1.0-10.0 mg/L of~~ 2,4-D (2,4-dichlorophenoxy acetic ~~acid~~ acid), ~~pochloram~~ pichloram and NAA (~~naphthaleneacetic~~ naphthaleneacetic acid) in an amount of 1.0-10.0 mg/L;

~~Forming~~ forming an adventitious root by transferring ~~it~~ the callus to a MS (MurashigeSkooG) ~~media~~ medium containing 1.0-5.0 mg/L of IBA or NAA, after subculturing the induced callus in every 2-4 weeks which was propagated on a MS ~~media~~ medium containing 0.1-5.0 mg/L of 2,4-D;

~~Propagating~~ propagating the above adventitious root on MS ~~media~~ medium;

~~Seeding~~ seeding the propagated adventitious root in a ~~buoyant~~ balloon type airlift ~~shape~~ bioreactor and culturing ~~it~~ the propagated adventitious root in a MS ~~media~~ medium containing 3% of sugar and 1.0-10.0 mg/L of ~~BSSA~~ BSAA (benzo [b] selenienyl

acetic acid) or IBA or NAA as a growth regulator to generate a cultured adventitious root; and

~~Mass~~ mass propagating the cultured adventitious root by scaling up ~~with~~ in a 20-50 ton bioreactor as a culture vessel.

2. (currently amended) The method for adventitious root mass propagation of ginseng, camphor ginseng ~~and~~ or wild ginseng by tissue culture of claim 1, the method for the mass propagation of adventitious root of ginseng, camphor ginseng, or wild ginseng by tissue culture under the conditions ~~including~~ wherein the concentration ratio of inorganic matter to solvent of is 1/2- 1/2 to 3/4, pH is 5.7-6.0, a sugar concentration of is 3-5% and the temperature of is 18-24 °C.

3. (currently amended) The method for adventitious root mass propagation of ginseng, camphor ginseng ~~and~~ or wild ginseng by tissue culture of claim 1, the method for the mass propagation of the adventitious root of ginseng, camphor ginseng, or ~~and~~ wild ginseng by ~~tissue~~ culture including the seeding method of the propagated adventitious root to the bioreactor through seeding ~~the cultured explants~~ the adventitious root ~~together with the newly formed lateral root~~ sectioned randomly ~~in~~ at a length of 1-2 cm.

4. (currently amended) The method for adventitious root mass propagation of ginseng, camphor ginseng ~~and or~~ or wild ginseng by tissue culture as claimed claim 1 or 3, ~~the method for the mass propagation of the adventitious root of ginseng, camphor ginseng and wild ginseng by tissue culture including the culturing conditions of the adventitious root in the bioreactor including the temperature of 22°C, the air injection rate of 0.05-0.3vvm and pH of 6.0~~ wherein the adventitious root of ginseng, camphor ginseng or wild ginseng by tissue culture is cultured in the bioreactor in which a temperature is 22°C, an air injection rate is 0.05-0.3 vvm and a pH is 6.0.

5. (currently amended) The method for adventitious root mass propagation of ginseng, camphor ginseng ~~and or~~ or wild ginseng by tissue culture of claim 1, wherein the method for the mass propagation of the adventitious root of ginseng, camphor ginseng ~~and or~~ or wild ginseng by tissue culture ~~including the further~~ includes a re-seeding step of the adventitious root after 2 weeks culturing.

6. (currently amended) A method for improving saponin content of adventitious root of ginseng, camphor ginseng ~~and or~~ or wild ginseng, when culturing ginseng, camphor ginseng ~~and or~~ or

wild ginseng using tissue culture, the method comprises the steps of:

~~Pre-treating~~ pre-treating the adventitious root with any one of the growth regulators ~~such as~~ BA(benzyl adenine), 2iP, zeatin, methyl jasmonic acid, TDZ, kinetin, or jasmonic acid ~~on~~ at a the concentration of 1.0-100 mg/L for 1-10 hours;

~~Obtaining~~ obtaining the adventitious root by tissue culturing one of the ginseng, camphor ginseng and wild ginseng;

~~Seeding~~ seeding the adventitious root, which was pre-treated with any one of the growth regulators, on MS ~~media~~ medium containing 3% of sugar and 0.5-5.0 mg/L of IBA or NAA and incubating it in a bioreactor in which the temperature is 22-25 °C and pH is 6.0 under any one of ~~the~~ lights selected from the group consisting of ~~such as~~ blue light, red light, and fluorescent light; and

~~Harvesting~~ harvesting the cultured adventitious root that was treated 10 days before harvest with 1.0-10.0 mg/L of jasmonic acid or methyl jasmonic acid in a bioreactor for 7 days.

7. (currently amended) A method of culturing adventitious root of ginseng, camphor ginseng ~~and~~ or wild ginseng by tissue, the method for improving the saponin content of adventitious

root of ginseng, camphor ginseng ~~and or~~ wild ginseng by tissue comprises the steps of:

~~Pre-treating~~ pre-treating the adventitious root with any one of the growth regulators ~~such as~~ BA, 2iP, zeatin, methyl jasmonic acid, TDZ, kinetin, or jasmonic acid ~~on the~~ at a concentration of 1.0-100 mg/L for 1-10 hours;

~~Obtaining~~ obtaining the adventitious root by tissue culturing one of the ginseng, camphor ginseng and wild ginseng;

~~Seeding~~ seeding the adventitious root, which was pre-treated with any one of the growth regulators, on MS ~~media~~ medium containing 3% of sugar and 0.5-5.0 mg/L of IBA or NAA and incubating it in a bioreactor which the temperature is 22-25 °C and pH 6.0 under any one of the lights such as blue light, red light, fluorescent light; and

~~Harvesting~~ harvesting the cultured adventitious root washing the cultured adventitious root with tap water and then treating it with 1.0-10.0 mg/L of jasmonic acid or methyl jasmonic acid for 7 days after ~~washing it with tap water.~~

8. (currently amended) The method for improving saponin content of adventitious root of ginseng, camphor ginseng ~~and or~~ wild ginseng, when culturing ginseng, camphor ginseng, or wild ginseng using tissue culture of claim 6, the method for

improving saponin content in the adventitious root of ginseng, camphor ginseng ~~and~~ or wild ginseng by tissue culture including choosing any one of ~~the~~ a balloon ~~shape~~ type bioreactor or ~~the~~ a conical type ~~shape~~ airlift bioreactor.

9. (currently amended) The method for improving saponin content of adventitious root of ginseng, camphor ginseng, or wild ginseng, when culturing ginseng, camphor ginseng ~~and~~ or wild ginseng using tissue culture of claim 6 or 7, the method for improving saponin content in the adventitious root of ginseng, camphor ginseng, or wild ginseng by tissue culture including transferring to the ~~media~~ medium which was not added nitrogen; for 5-10 days before the harvest of cultured adventitious root.